Weekly Report #1

Group Nr. 21: "Face Reconstruction"

February 15, 2022

1 Weekly Progress

Accomplished tasks: Organised first group discussion for pipeline formalization and resource collection.

- Tong Yan Chan (03722291): Collected research papers and did research.
- Dushyant Anirudhdhabhai Dave (03728740): Performed research from materials. Explored Dlib library.
- Daniel Schubert (03666228): Collected research papers and aquired necessary dataset from TA.
- Chang Luo (03759570): Collected research papers and did research.

Research papers that we have collected/explored are Face2Face: Real-time Face Capture[2], Real-time Non-rigid Reconstruction using an RGB-D Camera[3], and Real-Time High-Fidelity Facial Performance Capture[1].

2 Problems

Currently, we a were discussing necessary steps for initializing our pipeline. Specifically, we were discussing how to pre-process the dataset. One prospect we figured out is to use Dlib library as it comes with plug-ins for facial keypoint detection.

3 Results

Currently, our work has been to perform research and formalize our milestones (discussed in the following section).

4 Plan

Work Distribution

- Handling the .mat dataset format. (if difficult to handle, ask TA to use kinect for own dataset). Assigned to Tong Yan Chan.
- Pre-process the dataset (find the information on how and what is the process) Assigned to Dushyant Dave and Chang Luo.
- Continue researching on generating optimized model. Assigned to all members.

References

[1] Chen Cao, Derek Bradley, Kun Zhou, and Thabo Beeler. Real-time high-fidelity facial performance capture. *ACM Transactions on Graphics*, 34(4):1–9, July 2015.

[2] Justus Thies, Michael Zollhfer, Marc Stamminger, Christian Theobalt, and Matthias Niener. Face2Face: Real-time Face Capture and Reenactment of RGB Videos. *arXiv:2007.14808 [cs]*, July 2020. arXiv: 2007.14808.

[3] Michael Zollhfer, Matthias Niener, Shahram Izadi, Christoph Rehmann, Christopher Zach, Matthew Fisher, Chenglei Wu, Andrew Fitzgibbon, Charles Loop, Christian Theobalt, and Marc Stamminger. Real-time non-rigid reconstruction using an RGB-D camera. *ACM Transactions on Graphics*, 33(4):1–12, July 2014.